Gravity Control Foundations

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Title: PUBLIC DISCLOSURE OF INVENTION:
SYSTEM AND METHOD FOR LOCAL GRAVITATIONAL FIELD MODIFICATION USING EINSTEIN–CARTAN–KALUZA–KLEIN THEORY UNDER GENERAL SINGULARITY CONDITIONS

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PURPOSE OF THIS DOCUMENT

[**0001**] This document provides a comprehensive public disclosure of a novel system and method for locally modifying gravitational fields. Based on an extended theoretical model that merges Einstein–Cartan–Kaluza–Klein (ECKK) geometry with the General Singularity (GS) principle, this invention enables the engineering of "Gravitational Control Bubbles" (GCBs) to alter the effective gravitational acceleration in a defined region of space. The document details theoretical foundations, technical aspects, energy estimates, and potential applications, encouraging further research and development in gravitational control technologies.

FIELD OF THE INVENTION

[**0002**] The present invention relates to gravitational field engineering, quantum vacuum manipulation, and torsion-based spacetime modifications. It introduces concepts from advanced gravitational theory—specifically ECKK geometry and the GS principle—to create localized regions where gravitational acceleration can be reduced or otherwise altered.

[**0003**] Potential fields of application include, but are not limited to:

- **Aerospace Propulsion**: Providing partial lift without conventional thrust, potentially revolutionizing spacecraft and aircraft technologies.
- **Precision Physics Experiments**: Enabling novel tests of fundamental physics by manipulating local gravitational fields.
- **Energy and Transportation**: Offering new methods of delivering energy or reducing effective weight in infrastructure or cargo transport.

BACKGROUND OF THE INVENTION

[**0004**] Traditional General Relativity (GR) does not straightforwardly permit local gravitational field control. While gravity is understood as a manifestation of spacetime curvature, it is generally considered passive and immutable by local interventions. However, extensions to GR, such as the Einstein–Cartan theory, introduce torsion and additional geometric freedoms. When combined with Kaluza–Klein extra dimensions and the General Singularity principle, topological quantization of parameters emerges, providing a discrete set of physical constants and novel geometric configurations.

[**0005**] Experiments by Podkletnov [3] and theoretical proposals by Li and Torr [4, 5] have suggested the possibility of anomalous gravitational effects in rotating superconductors. While controversial, these attempts motivate a rigorous theoretical framework—offered here by the ECKK-GS model—that can explain and predict such phenomena.

BRIEF SUMMARY OF THE INVENTION

[**0006**] This invention introduces a method for local gravitational control by:

1. Treating the vacuum as a Bose–Einstein condensate (BEC) of spacetime fluctuations.
2. Incorporating torsion and topological constraints to fix discrete sets of physical parameters.
3. Employing superconducting states to induce gravitational analogues of electromagnetic superconductivity, yielding gravitational London-type equations and a Meissner-like effect for gravity.
4. Forming Gravitational Control Bubbles (GCBs) wherein the effective gravitational acceleration g_{eff} is altered from the standard g_0.

[**0007**] We provide energy estimates for generating a GCB to achieve partial lift of a mass on Earth, discuss technical challenges, and highlight potential applications in propulsion, precision experiments, and beyond.

BRIEF DESCRIPTION OF THE DRAWINGS

1 Schematic representation of a rotating superconducting disk device, illustrating the progression of gravitational field manipulation. The figure demonstrates how a gravitational Meissner-like effect, under ECKK-GS conditions, leads to the formation of a Gravitational Control Bubble (GCB), starting from uniform field lines (freefall state), transitioning through quantum locking, and culminating in buoyancy thrust. Inspired by similar

experimental setups like Podkletnov's configuration, this visual emphasizes the role of superconductivity and torsion in altering local gravitational dynamics.

2 Conceptual configuration of a superconducting ring above a rotating mass cylinder, showing predicted gravitomagnetic fields induced by torsion and vacuum engineering.

3 Simulation plot of the gravitational Meissner-like effect, illustrating the decay of gravitomagnetic field $\mathbf{B}_g$ inside a superconducting region.

<u>**DETAILED DESCRIPTION OF THE INVENTION**</u>

Foundations of the ECKK-GS Model[0008] Einstein–Cartan–Kaluza–Klein

Geometry: We start from a $(4+n)$-dimensional manifold with metric $\hat{g}_{AB}$ and torsion T^A_{BC}. Torsion incorporates spin effects, while Kaluza–Klein compactification and topological constraints yield discrete parameter sets. The General Singularity principle [1, 2] treats the vacuum as a quantum BEC state, ensuring all complexity arises from geometry and topology.

$$S = \frac{1}{2\hat{\kappa}^2} \int d^{4+n}x \sqrt{-\hat{g}}\hat{R} + S_{\text{torsion}} + S_{\text{top}} \tag{1}$$

[**0009**] **Vacuum as a BEC:** Introduce a gravitational wavefunction ψ_g:

$$i\hbar \frac{\partial \psi_g}{\partial t} = -\frac{\hbar^2}{2m_g}\nabla^2\psi_g + V_g\psi_g + \kappa|\psi_g|^2\psi_g, \tag{2}$$

where m_g is an effective mass scale and V_g a gravitational potential.

Gravitational London Equations and Meissner-like Effect

[**0010**] In analogy with superconductivity, define gravitomagnetic $\mathbf{B}_g$ and gravitoelectric

$\mathbf{E}_g$ fields. A mass supercurrent emerges:

$$\mathbf{J}_s = \frac{q_g}{m_g} n_s (\hbar \nabla \theta_g - q_g \mathbf{A}_g), \tag{3}$$

where $n_s = |\psi_g|^2$ and q_g is an effective gravitational charge.

[0011] Variation of the action yields:

$$\frac{\partial \mathbf{J}_s}{\partial t} = \frac{q_g^2 n_s}{m_g} \mathbf{E}_g, \quad \nabla \times \mathbf{J}_s = -\frac{q_g^2 n_s}{m_g c} \mathbf{B}_g. \tag{4}$$

From these, a gravitational Meissner-like effect appears:

$$\nabla^2 \mathbf{B}_g = \frac{\mathbf{B}_g}{\lambda_g^2}, \quad \lambda_g = \sqrt{\frac{m_g c^2}{4\pi G q_g^2 n_s}}, \tag{5}$$

implying $\mathbf{B}_g$ field expulsion from the superconducting region.

Gravitational Control Bubbles (GCBs)

[0012] By engineering torsion and topological parameters, one can form GCBs where:

$$g_{eff} = g_0 (1 - \alpha |\psi_g|^2). \tag{6}$$

Adjusting α and $|\psi_g|^2$ enables partial gravity reduction. Such configurations reinterpret experiments like Podkletnov's under a consistent theoretical framework.

Energy Estimates for Lifting a Mass

[0013] Consider lifting $M = 1000\,\mathrm{kg}$ by $\Delta g = 0.1 g_0$. For a GCB radius $R = 2\,\mathrm{m}$:

$$V_{GCB} \approx 33.5\,\mathrm{m}^3.$$

Using dimensional arguments:

$$E_v \sim \frac{\hbar c}{\lambda_g^4},$$

thus:

$$E_{total} \approx E_v V_{GCB} \gg 10^9\,\mathrm{J}$$

While large, these energy estimates do not forbid the concept—advances in torsion control or novel superconductors could reduce this requirement.

Applications and Advantages

- **Propulsion**: GCBs may provide lift with reduced fuel consumption.
- **Precision Experiments**: Local gravity adjustment for fundamental physics tests or delicate metrology.
- **Energy and Infrastructure**: Reduced effective weight of structures, potentially aiding in construction, transport, or novel energy distribution methods.

Objectives[0014] :

- Achieving stable torsion fields and maintaining $|\psi_g|$ at required values.
- Developing high-T_c superconductors to reduce energy costs.
- Implementing feedback loops, sensors, and control electronics for real-time gravitational field shaping.

As materials and topological engineering advance, these limitations may be overcome, unlocking practical gravitational control technologies.

CLAIMS

A method for locally modifying gravitational fields comprising:

1. Configuring a superconductive assembly under ECKK-GS conditions to induce torsion and topological constraints in the vacuum.

2. Defining a gravitational wavefunction ψ_g representing a Bose–Einstein condensate of spacetime fluctuations.

3. Deriving and applying gravitational London-type equations, yielding a gravitational Meissner-like effect.

4. Forming a Gravitational Control Bubble (GCB) where $g_{eff} < g_0$, enabling partial gravitational lift of an object.

The method of claim 1, wherein energy estimates for achieving a desired Δg guide the engineering of torsional and superconducting parameters to minimize power consumption.

The system of claim 1, enabling creation of stable GCBs for aerospace propulsion, precision measurement systems, and energy management applications.

The method of claim 1, further comprising integration with sensors and control electronics to dynamically adjust torsion fields, vacuum state parameters, and superconducting conditions for real-time gravitational field tuning.

ABSTRACT OF THE DISCLOSURE

A system and method for local gravitational field modification are disclosed, leveraging Einstein–Cartan–Kaluza–Klein geometry under General Singularity conditions. By modeling the vacuum as a Bose–Einstein condensate and introducing torsion, topological charges, and superconductive states, gravitational London equations and a Meissner-like effect are derived. This enables the formation of Gravitational Control Bubbles (GCBs) that locally reduce effective gravitational acceleration, offering a pathway to gravity manipulation for advanced propulsion, precision experiments, and industrial applications.

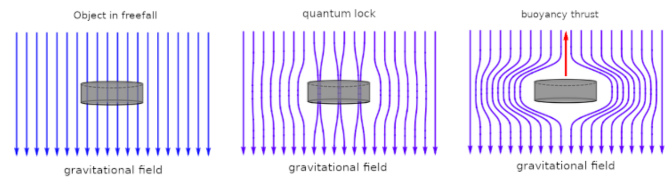
Object in freefall
gravitational field
quantum lock
gravitational field
buoyancy thrust
gravitational field

FIG. 1

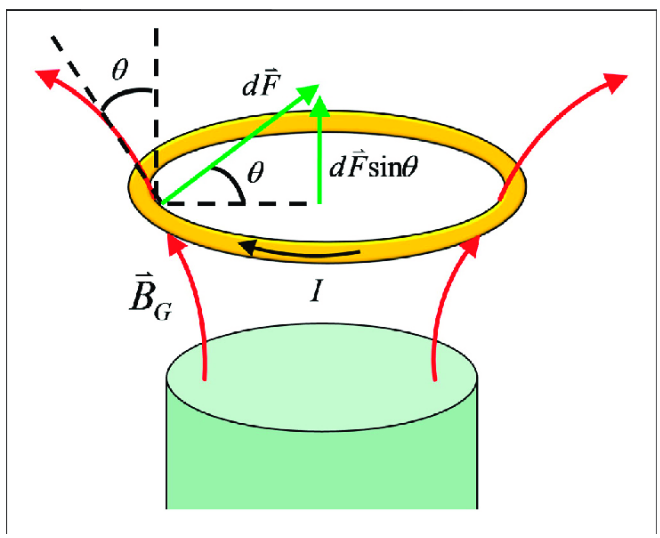
θ
$d\vec{F}$
θ
$d\vec{F}\sin\theta$
$\vec{B}_G$
I

FIG. 2

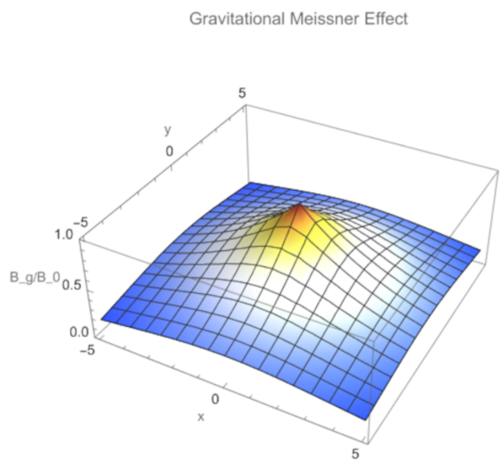

FIG. 3

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